



## International SportMed Journal

### FIMS Position Statement 2011

#### Guidelines for the composition of the travelling medical kit for Sports Medicine professionals

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#### Abstract

There has been a substantial increase in sports participation across the range of sporting events. From the medal point of view, medical support staff present at these events should be prepared for any form of medical emergency. Thus adequate and careful advanced planning for these possible emergencies included the putting together of an emergence sports medicine kit which can be taken for local events and if teams travel to other countries. **Keywords:** travelling medical kit

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Professor Derman has played an important role in the clinical support for South Africa's athletes at International level. He fulfilled the positions of Chief Medical Officer for the South African Team to the Sydney 2000, Athens 2004 and more recently, Medical Officer for the South African Paralympic Team to Beijing in 2008. In December to May 2002, he served as Flight Surgeon to Cosmonaut Mark Shuttleworth during the "First African in Space" mission in Russia. He also appointed as the Medical Officer for Cape Town during the FIFA 2010 Soccer World Cup.

#### Introduction

Over the last three decades participation in sporting events ranging from multi-coded

sports events to long distance running and hiking events, cycle races, triathlons, rugby and soccer matches at all levels, has



increased dramatically. From the medical perspective, increased participation at such sporting events can be viewed as a potential major casualty situation. The medical support personnel covering the sports event should be prepared for any form of emergency<sup>1</sup>.

Each type of sports event has unique medical problems, but these sporting events also share common hazards. Therefore adequate and careful advanced planning to anticipate casualties at sporting events requires adequate preparation. Part of this preparation includes the provision of an emergency sports medicine kit. This article provides a guideline for the contents of a sports medicine kit for use in the medical coverage of sports events. The kit's composition is based on practical Sports Medicine experience<sup>1-5</sup> and also aviation,<sup>6-8</sup> space medicine<sup>9</sup>, environmental, travel medicine<sup>10-13</sup>, and wilderness medicine experiences.<sup>14-16</sup>

### **Considerations for the composition of the kit**

The composition of the medical kit should take into consideration the nature of the sports event and the country or area to which the team will be travelling. Travel away from the home base and especially to countries with fewer resources will require a more expansive inventory of supplies.

### **The nature of the sports event**

Although the principles of primary care management of athletes' illness and injury is similar regardless of the sports event, a good working knowledge of the sport you are covering allows improved prior planning for the type and quantity of supplies in a travelling medical kit.<sup>3;4;17</sup> For example, supplies for a contact sport like rugby will differ from that for a swim team, or endurance events like a cycle tour or a marathon race. Athletes with disabilities also have different medical requirements that will affect the decisions for equipment and supplies.

A working knowledge of the nature and profile of injuries and illnesses documented in previous events is important in the decision tree. Furthermore, the age, gender health status, and chronic medication profiles of the both the team members and the accompanying officials will influence the decision process for the team. Often more

medical care is provided for the accompanying officials than the athletes themselves. Thus the travelling team physician has to plan for nearly every eventuality.

### **The country or area to which you will be travelling**

Whilst the support provided at a local school's soccer event may vary from the support provided at the Olympic Games, the basic principles of the primary management of illness or injury in athletes is the same. However, the nature of existing medical support services in different countries varies substantially<sup>18</sup>. Reports from colleagues who have travelled to the host site, online research, or site visits prior to the event will help you learn about the destination country and will impact the contents of your travelling kit. It is important to determine the quality and quantity of local medical support, including access to other specialists, hospitals and emergency services.

Other critical determinations are:

- a Government rules and regulations regarding border importation of medication and supplies you may carry in your bag. Customs declaration procedures must be strictly followed and it might also be necessary to acquire a temporary medical license or registration to render medical services to your own athletes in the host country.
- b Vaccination requirements for travel to the host country to ensure the team and other travellers are adequately immunised to be allowed into the country.  
(<http://www.who.int/ith/en/index.html>)
- c Supply source for pharmacological agents and disposable supplies in the local area so that depleted stock can be replenished.
- d Special environmental or medical challenges at the destination that could impact the health of the athletes e.g. quality of food and water, mosquitoes and insect vectors, dangerous animals like



snakes spiders, or scorpions in the area (<http://www.who.int/ith/en/index.html>). It is also important to determine the voltage of electrical current and the nature of the plug points in the local area so that adapters can be arranged for your equipment.

- e If the physician will be undertaking air travel with a team. It is advisable to determine the local regulations regarding the transport of the medical kit onboard the aircraft. If the medical kit is required to be checked-into the cargo section of the plane, it is advisable to have a smaller, hand-held or fanny-pack style kit (without blades, knives, needles or liquids) that can be used for onboard management of minor medical complaints, although many airlines carry first aid kits for in air emergencies.

### **The design of the medical bag**

The size and contents of the sports medicine kit may vary depending on (i) whether other sources of equipment and medications are easily available and if there are back-up facilities for the team physician (e.g. a polyclinic), (ii) the training of the person

providing the primary care of the injured athlete, and (iii) the size of the overall team.

Whilst it is acknowledged that each clinician will have their own preference in the design and composition of their medical bag, as a general guideline, a bag that is large enough to carry a fair amount of equipment and stocks, but that can be adapted and carried as a back-pack when travelling distances between events, is ideal. The bag should be lockable and could have paramedic-style, removable, transparent compartments the contents of which can be packed according to broad categories, for example diagnostics, dressings, medications, splints, injectables and emergency drugs. This would facilitate easy and rapid access to the contents under emergency conditions.

Emergency drugs and other ampoules should be imbedded in a labelled sponge or foam sub-container that will help avoid breakages during travel.

The potential contents of a sports medicine kit are listed in Table 1 for use by a doctor or team physician. It is important to note that each physician will have individual preferences regarding some items and the lists need to be modified to reflect individual choices and practice methods. Broad categories of agents are provided and the availability of these agents will vary between countries.

*Table 1: Contents of the Sports Medicine kit for the team physician*

#### **a) Diagnostic and other hardware**

- Diagnostic ENT-ophthalmoscope set
- Blood pressure cuff
- Stethoscope
- “Pocket” AED (Automatic External Defibrillator)
- Pocket torch
- Pocket knife with multi-tool
- Scissors
- Airways of different sizes
- Disposable one-way resuscitation valve
- Laryngoscope
- Endotracheal tubes (various sizes)
- Ambubag
- Reflex hammer
- Peak flow meter and mouth pieces
- Urine test strips
- Glucometer with test strips
- Eye kit with flourocein strips
- Vaginal speculum



Nasal speculum  
Tongue depressors  
Tape measure  
Eye patch  
Cyoacrilate (super-glue)  
Sharps container  
Razors  
Space blanket  
Pen, paper, prescription pad  
Foley catheter (can be used as underwater drain)  
Emergency protocols  
International pharmacopeia.  
List of local emergency telephone numbers  
WADA list of banned substances  
Cotton tipped applicators  
Disposable ice pack

**b) Suture kit**

Dental syringe and needles  
Needle holder  
Forceps  
Scalpel blades  
Scissors  
Artery forceps  
Disposable sterile pack and towel  
Absorbable and non-absorbable sutures in various sizes  
Wound closure strips  
Wound glue  
Staple gun  
Local anaesthetic e.g. lignocaine with & without adrenaline  
Long acting local anaesthetic e.g. bupivacaine  
Alcohol swabs, gauze swabs  
Disposable sterile gloves

**c) Dressings and other disposables**

Plasters of various sizes  
Bandages – crepe & triangular, various sizes  
Elasticized bandages, various sizes  
Tubigrip elasticised bandage  
Rigid strapping  
Gauze swabs  
Jell-net dressing  
Transparent waterproof sterile dressing e.g. tegaderm or opsite  
Pad-like wound dressing e.g. primapore  
Scrubbing brush  
Iodine solution  
Shave gel (foaming soap)  
Antibiotic dressing cream e.g. muropuricin  
Merchurochrome solution  
Merthiolate solution  
Burn dressing  
Nasal tampons  
Vaginal tampons and pads  
Shoe laces  
Safety pins  
Plastic bags  
Sunblock  
Condoms  
Urine bottles  
Lubricating jelly  
Tape



**d) Injections and emergency drugs**

Syringes (3/5/10/20 ml with assorted size needles)  
Alcohol swabs  
Intravenous infusion cannulas (assorted sizes)  
Drip administration set  
Saline & dextrose infusion bags  
Adenosine  
Adrenalin pre-filled syringes (x2) e.g. epipen  
Aminophylline  
Atenolol  
Atropine sulphate  
Chlorpromazine  
Clonazepam  
Dexamethasone shock pack  
Diazepam  
Dopamine  
Furosemide  
Glucagon  
Hyoscine butrobromide  
Lignocaine hydrochloride  
Magnesium sulphate  
Mannitol  
Metoclopramide  
Naloxone hydrochloride  
Pethidine/Morphine (check legislation in foreign country)  
Prochlorperazine  
Sodium bicarbonate  
Verapamil  
Nitroglycerine spray  
Salbutamol inhaler  
Aspirin chew tablets  
Water for injection  
Tetanus toxoid

**e) Braces and orthopaedic equipment**

Shoulder sling  
Wrist brace  
Finger splints  
Ankle/Knee brace  
Neck collar/brace  
Fiber-glass or other light-weight splinting

**f) Medications**

**Analgesics** e.g. paracetamol, paracetamol & codeine, tramadol

**Antibiotic, antifungal & antiviral agents**

e.g. penicillin, cephalosporin, tetracycline, quinolone, macrolides,  
metronidazole, zanamivir, HIV exposure pack

**Anti-inflammatory agents** e.g. diclofenac, ibuprofen, meloxicam

**Antihistamines & corticoids** e.g. fexofenadine, prednisone

**Cardiovascular agents**

Diuretics e.g. amiloride  
Antihypertensive agents  
Anti-angina agents

**Dermatological preparations**

Bite & sting ointment e.g. mepyramine cream  
Insect repellent  
Antibiotic preparation e.g. mupirocin cream  
Corticosteroid preparations e.g. hydrocortisone acetate  
Combination antibiotic & corticosteroid preparations  
Antifungal preparation e.g. Clotrimazole



Combination anti-fungal & corticosteroid preparations  
Antiviral ointment e.g. acyclovir  
Topical anti-inflammatory agents

**Neurological agents**

Anti-migraine agents e.g. zolmitriptan, sumitriptan  
Anxiolytic agents e.g. alprazolam  
Sleep inducing agents e.g. zolpidem, zopiclone

**Ophthalmics**

Antibiotic eye drops  
Analgesic eye drops  
Natural tears  
Corticosteroid eye drops  
Antihistamine eye drops  
Decongestant eye drops

**Respiratory agents**

Cough mixture  
Corticosteroid inhaler  
Long & short acting beta agonist inhaler  
Agents for nebulisation e.g. salbutamol, ipratropium  
Mucolytic agents e.g. n-acetyl cysteine

**Ear, nose and throat agents**

Throat lozenges  
Decongestant nasal spray e.g. oxymetazoline  
Decongestant/analgesic/anti-pyretic oral agents  
Corticosteroid nasal spray e.g. budesonide  
Analgesic/antibiotic ear drops  
Wax softening ear drops  
Nasal douche solution/spray

**Gastrointestinal agents**

Antispasmodic agents e.g. hyoscine  
Anti-diahorrea agent e.g. loperamide  
Anti-nausea agents e.g. cyclizine hydrochloride  
Antacid agents e.g. cimetidine, magnesium trisilicate  
Pro-motile agents e.g. metoclopramide  
Anti-constipation agents e.g. sennosides, ispaghula husk  
Pro-biotic agents  
Anti-haemorrhoid medication e.g. prednisolone ointment

**Uro-genital & gynaecological agents**

Anti-gout agents e.g. allopurinol  
Anti-fungal pessaries  
Vaginal douche e.g. iodine douche  
Urinary alkaliser e.g. Sodium citrate/bicarbonate granules  
Oral contraceptive pill (post exposure contraception)  
Oestrogenic/progestogenic agents e.g. norethisterone,  
medroxyprogesterone acetate, norgestrel

**Vitamins, minerals & electrolytes**

Multivitamin compounds  
Electrolyte compounds  
Iron supplementation  
Vitamin B<sub>12</sub>; B<sub>12</sub> vials for intramuscular injection

**The choice of medications for travel**

Of the many responsibilities of a team physician, one of the more difficult decisions is which medications will be required to successfully manage the athletes' and officials' medical problems at an international destination. For example, it is not uncommon

on a single trip to be expected to manage a minor outbreak of gastroenteritis, renal stones, myocardial infarction, diabetes complications, acute psychosis, and a variety of musculoskeletal injuries.



It is prudent to select a sufficient variety of agents in sufficient quantities to be independent of the services provided by the host country. Estimating the quantity of agents is difficult; however, formulas to assist in the estimate are available<sup>4</sup>. Whilst a comprehensive list of potential medications has been suggested in this guideline, it may not be possible to carry all of these agents in the physician's kit bag, as it would be too large and heavy. For this reason, it is suggested that the majority of agents are kept in a locked cupboard at the base facility and at least one medication (or a small quantity) from each category is kept in the physician's kit bag so that the physician may be prepared to treat most medical problems. It is also worthy of mention that an ECG and lung function apparatus, oxygen supplies, a spinal board, scales and portable high-resolution ultrasound equipment are also useful and sometimes essential equipment for the team physician, yet will be too bulky to carry in a portable medical kit bag.

Whilst host country services can be excellent and "state-of-the-art," they can vary greatly depending on the geographical location and the choice of available medications as selected by the local pharmacist. Furthermore, certain medications might simply not be available in the host country or stock might be limited, or there might be delays in accessing host polyclinic services leading to a delay in patient management. In some countries, the constituents of certain common medications can vary and, contamination of agents can also occur. Thus a comprehensive, sufficiently stocked medical supply kit is important.

It is also important to note that most medications should be kept at a temperature of 4-25°C, whilst some, including tetanus toxoid and insulin, require refrigeration. After each event or trip, the supplies of the sports medicine kit need to be restocked and updated and modification made based on needs for the next event. A consistent method of restocking with reference to a master list is advised.

Providing a medical service to travelling athletes and officials would necessitate carrying agents in the travelling kit, which are prohibited in sport by WADA. It is important that these agents are colour coded in the bag so that the team physician is constantly reminded of their status.

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